Climate Change and Sectors: Some like it hot!

8th Annual Global Conference on Environmental Taxation
October 19, 2007, Munich
Agenda

1. Two dimensions of climate change
2. Sectors under the climate focus
3. Conclusion
First dimension of climate change: Environmental/climatic dimension

- Human activity's major impact on climate change recognised by majority of scientists
- Major uncertainty surrounds the speed, scale and concrete consequences of climate change, but a number of trends are regarded as likely:
  - Rise in average global temperature
  - Change in precipitation patterns
  - Increase in local weather extremes
- Expected negative consequences include damage to buildings and infrastructure, smaller harvests, desertification and fatalities
- Climate change can at best be slowed down during the next 20 years, but not stopped
  - Global demand for energy increasing, focus on fossil fuels
  - Delayed impact of greenhouse gases already emitted
Fossil fuels subject to increasing price and volume risks

- Energy prices have risen sharply in recent years
  - Price increase largely driven by demand (dynamic global economy, thirst for energy of China and India will be a long-term factor)
  - Securing access to fossil fuels is a high-priority policy goal worldwide
- Energy procurement also remains vulnerable to supply shocks
  - Large proportions of fossil fuel reserves in politically disputed regions
  - Exploration and extraction of the fuel from new oil and gas fields will become more expensive – despite technical advances
- Overall, growing uncertainty about security of supply and price volatility
- Era of permanently low energy prices is over
Second dimension of climate change: Regulatory/market-related dimension

- Both the threat posed by climate change and the changing energy supply conditions make extensive political action necessary
- Broad mix of environmental and energy policy instruments available that will be deployed increasingly going forward
- Difference between policy focus of EU, USA and emerging markets
- However, general trends emerging; Examples:
  - Consumption of (fossil) fuels is to be made more expensive
  - Subsidies for low-carbon energy sources will rise, also for security of supply reasons
  - Funding for energy efficiency and measures to slow the pace of climate change and mitigate its negative consequences
- Uncertainty about concrete measures
Agenda

1. The Stern Review and the political environment
2. Sectoral impact of climate change
3. Conclusion
Methodology of the analysis

- Focus on sectoral impact of both dimensions of climate change
- Some qualifications in order to reduce complexity:
  - Solely qualitative description of the potential impact
  - Ceteris-paribus assertions
  - Regional focus on Europe
  - Forecast horizon of 2030 at the latest
- Objective of this initial report: supply food-for-thought and indicate potential development paths; follow-up reports to focus on individual sectors
- Despite uncertainties concerning concrete climate policy measures, future technological development and climate changes it is possible to divide sectors into winners and losers
Energy sector split down the middle

- Renewables will be clear winners thanks to state intervention
  - But stronger focus on promoting efficiency (e.g. CO₂ prevention costs)
  - One-off subsidies no guarantee of preferential treatment in the future
  - Technological progress, economies of scale and correct choice of location are keys to success
  - Technologies for energy storage and transport becoming more important

- Fossil fuels expected to become more expensive
  - But huge modernisation in Europe and the rest of the world
  - If 100% of CO₂ certificates are auctioned, gas will benefit to the detriment of coal
  - In a global context, traditional power station technology will remain a growth market

- Export opportunities for European firms; energy research to be a winner

- Nuclear energy will remain a key activity internationally

- Several climatic impacts on energy sector
Agriculture and forestry: wide-ranging impact

- Rising demand and prices because of subsidies for bioenergies; conflict between foods and energy crops (Tortilla crisis)

- Other factors suggest prices will rise and price fluctuations will increase
  - Greater use of irrigation agriculture
  - More intensive use of fertilisers and crop protection agents
  - Increasing crop damage and variation in crop yields due to weather extremes

- Genetic engineering, biotechnology gaining importance

- Higher crop yields at higher latitudes possible, lower yields in southern Europe

- More storm damage in the forestry sector, risk of forest fires increasing

- Focus on planting in the appropriate location

- Major influence of the environmental dimension; adaptation measures entail heavy costs
Construction industry and related sectors are winners

- Considerable potential to cut CO₂ emissions by improving energy efficiency standards of existing stock of properties
  - State subsidy programmes and private initiatives will send investments in insulation rising sharply; returns on capital spending will materialise after a short period
  - Low CO₂ prevention costs, simple technology
- All sectors that help to enhance the energy efficiency of buildings will be among the winners (e.g. skilled building trades, architects, engineering practices)
- More measures to improve coastal defences, globally also via development aid projects
- More frequent extreme weather events result in damage to infrastructure and buildings that are repaired by the construction industry; positive regional and temporary effects
- Milder winters will improve conditions for construction industry
2 Sectors under the climate focus

Manufacturing industry (I)

- **Food**
  - Rising prices (bioenergies) and more price fluctuations (weather extremes)
  - Shifts in demand depending on weather conditions

- **Clothing**
  - Ability to plan ahead will be diminished, if weather “plays up” more frequently
  - Technical fabrics will benefit

- **Timber and furniture**
  - Rising prices of (energy) input, i.e. wood
  - Wood may gain importance as a material

- **Building materials**
  - Problem of high process-related emissions
  - Competitiveness relative to non-European rivals declines depending on regulation
Manufacturing (II)

- **Chemicals**
  - Burdened by rising energy prices
  - Cross-section industry that can help to develop climate technologies
  - Demand for pesticides and pharmaceuticals likely to increase

- **Rubber and plastics**
  - Research focused on reducing the rolling resistance of tyres
  - Lower car mileages means less replacement business
  - Increasing demand for plastics thanks to their weight advantages

- **Metal**
  - Rising energy costs can harm competitiveness relative to non-European rivals
  - Expansion of renewable energies and modernisation of existing power stations will boost demand for metals
Sectors under the climate focus

Manufacturing (III)

- Mechanical engineering and electronic engineering
  - Winners, since they supply technologies for combatting climate change and its negative consequences
  - Major export opportunities
  - Focus on energy efficiency
  - Advantage of low energy cost component

- Automotive
  - Cut in CO₂ emissions a declared political objective
  - Redoubling of efforts to develop new forms of propulsion
  - Boosting the efficiency of traditional powertrains holds the most short-term promise
  - Fuel consumption is becoming a selling point, especially for private car buyers
  - Fuel-efficient vehicles improve export opportunities
Transport will become more expensive
- For the air travel segment participation in EU emissions trading and/or ticket fees are on the political agenda
- Rising petroleum taxes – for example, in Eastern Europe – are hampering the road transport segment
- Rail transport and public transport are among the potential beneficiaries of regulatory measures (tax concessions conceivable)
- Internal waterways with special climate risks (flooding and water shortage)
- Shipping only gradually coming into the focus of international climate policy
- Climate risks for the transport sector on the increase

Tourism will tend to be on the losing side
- Regional and seasonal shifts in tourist flows likely; winners and losers
- Trend towards late booking likely to intensify; planning will become more difficult
- Higher costs for tourists due to mobility becoming more expensive
Services (II)

- Retailing: less solid basis for planning and bigger price fluctuations in some segments (e.g. clothing and food retailing)
- Business-related services: consultancy on saving energy and energy efficiency becoming more important
- Financial sector: wide-ranging impact
  - Greater uncertainty for the insurance sector due to climate risks, for example when calculating insurance premiums
  - Certain risks can no longer be covered with traditional products; new solutions must be found
  - Banks factor climate risks into their assessments of client creditworthiness
  - Opportunities from the financing of, for example, renewable energies or measures to combat the negative consequences of climate change
  - More investment products related to climate change (sustainable investments)
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State and market more important than climate impact

- Regulatory/market-related dimension of climate change will have a bigger – and above all earlier – impact on most sectors
  - Early announcement of measures by politicians is particularly important
  - Reliable basis for planning is decisive for economic agents
- For many sectors the opportunities of climate change outweigh the risks
  - The winners will above all be those sectors that can help to slow climate change and combat its negative consequences
  - Enormous export opportunities for Europe
- The winners will basically be those firms that adjust to the new environment at an early stage
- Research, for example in the area of energy efficiency, will become a key to success
Winning and Losing Sectors from Climate Change

Benefits from climate change under government controls

Environmental-climatic dimension (+)

Construction and associated sectors

Regulatory/Market related dimension (+)

Double winners

Automotive industry, Energy sector, fossil fuels

Tourism

Mechanical and electrical engineering

Food industry

Chemical industry, plastics

Renewable energies

Textiles and clothing

Financial sector

Agriculture and forestry

Building materials, paper industry, metal industry

Energy sector, fossil fuels

Transportation

Benefits from government Measures with climate risks

Double losers

Source: DB Research
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Two dimensions of climate change. Climate change has not just an environmental (global, long-term) dimension but also a regulatory (market economy) dimension. The latter includes government measures that are responsible for climate change and its economic consequences. This dimension will affect most sectors more so than the climate dimension.

The energy industry is in a particular focus of attention. Without doubt, renewable energy sources will be among the winners from climate change. On the other hand, due to their economic assessment, subsidies are not sustainable. In contrast, government measures are likely to make fossil fuels more expensive. Research and development of new and more efficient energy technologies will play a key role in the future.

Climate effects already noticeable in agriculture and forestry. Price for agricultural products could rise due to the increased demand for biofuels. Commodity (soybean food production, etc.) is anticipated. In future, climate (e.g., wind) variations will become more important. Agricultural irrigators and farmland technology will gain in importance.

The construction industry can profit in this regard. There is an enormous potential in the construction industry as demand for the energy-efficient installation of water heating, heating, etc. increases. Improving the thermo-technical situation clearly helps companies achieve high energy efficiency in special business activities.

Major potential for industrial sectors. Many industrial sectors could contribute to slowing climate change and its regulatory consequences. These include mechanical engineering (e.g., air-conditioning, heating and ventilation engineering, impregnation technology, and electrical engineering), energy conversion equipment, energy-efficient household appliances. These have enormous growth potential, and so there is a chance for the markets from climate change. Construction industries like the chemical industry are involved, too. More and more will be created in the booming environmental technology sector. These new industry have major challenges but also an opportunity for international success with successful and cost-effective solutions.

Shift of demand in the services sector. In the services sector, high ill be necessary government measures or the correct industry. The tourism businesses will have to deal with a more dynamic and seasonal variation in tourism. The tourism businesses will have to deal with a more dynamic and seasonal variation in tourism. The tourism businesses will have to deal with a more dynamic and seasonal variation in tourism. The tourism businesses will have to deal with a more dynamic and seasonal variation in tourism.
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